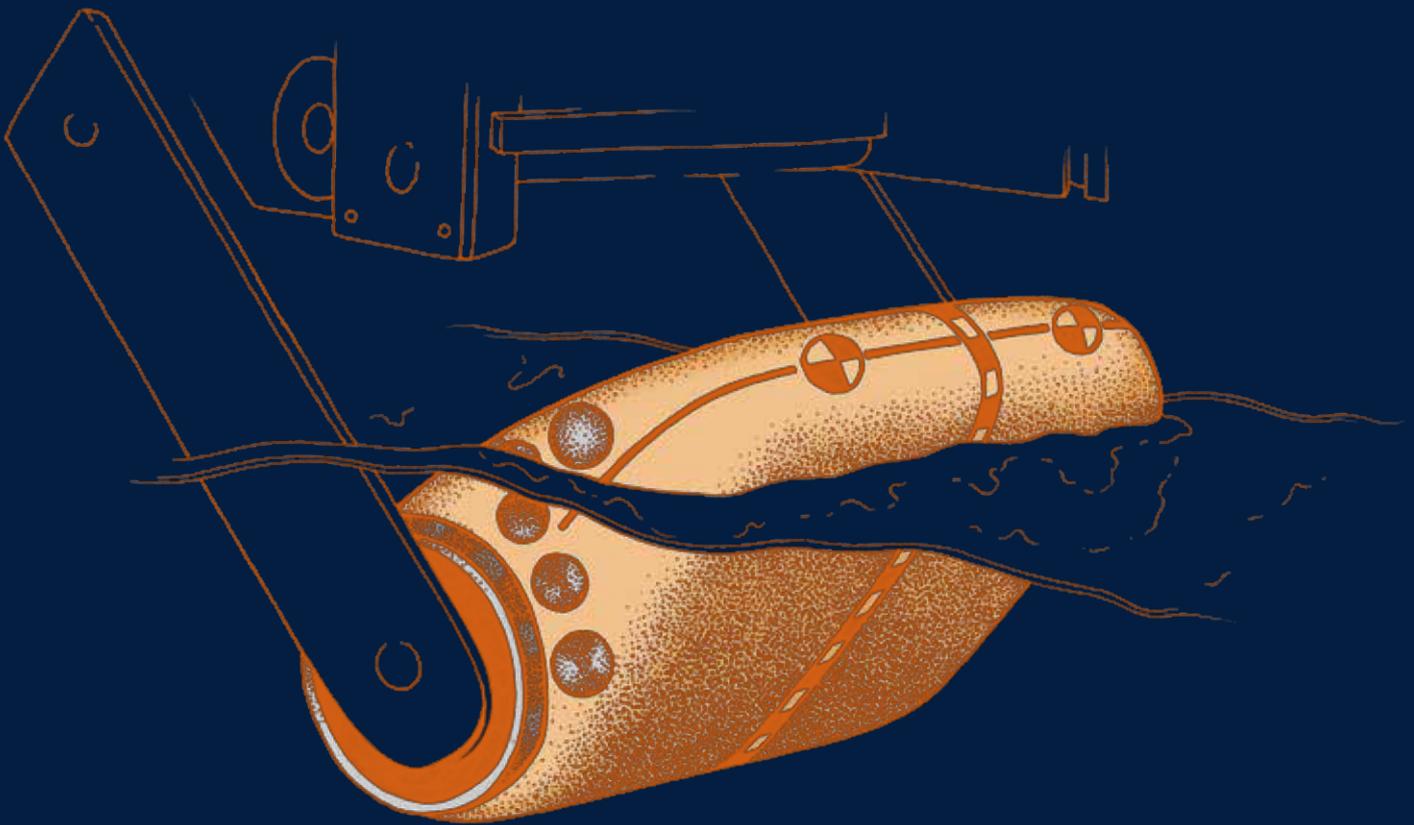




THE UNIVERSITY
of EDINBURGH

Engineering

Postgraduate Opportunities 2018



Influencing the world since 1583

“Edinburgh isn’t so much a city, more
a way of life . . . I doubt I’ll ever tire of
exploring Edinburgh, on foot or in print.”

Ian Rankin
Best-selling author and alumnus

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Influencing the world since 1583

15 Nov 2017
Postgraduate Open Day

[www.ed.ac.uk/
postgraduate-open-day](http://www.ed.ac.uk/postgraduate-open-day)

For more than 400 years the University of Edinburgh has been changing the world. Our staff and students have explored space, won Nobel Prizes and revolutionised surgery. They've published era-defining books, run the country, made life-saving breakthroughs and laid the foundations to solve the mysteries of the universe.

Our distinguished alumni include NASA astronaut Piers Sellers, former MI5 Director-General Dame Stella Rimington, Olympians Sir Chris Hoy and Katherine Grainger and historical greats such as philosopher David Hume, suffragist Chrystal Macmillan, who founded the Women's International League for Peace and Freedom, and physicist and mathematician James Clerk Maxwell.

International collaboration

An internationally renowned centre for academic excellence, we forge world-class collaborations with partners such as the California Institute of Technology (Caltech), Stanford University, the University of Melbourne, Peking University, the University of Delhi and the University of KwaZulu-Natal. As a member of the League of European Research Universities and the Coimbra Group, we link up with leading institutions across Europe.

Linking research and commerce

We were one of the first UK universities to develop commercial links with industry, government and the professions. Edinburgh Innovations promotes and commercialises our research excellence and can assist you in taking the first step to market, through collaborative research, licensing technology or consultancy.

Enhancing your career

We are committed to embedding employability in your University experience and have one of the Russell Group's best track records for graduate employment. From volunteering schemes to our sector-leading careers service, we provide you with opportunities to develop your skills, knowledge and experience, giving you an edge in the competitive job market.

TOP 50

We're consistently ranked one of the top 50 universities in the world. We're 23rd in the 2018 QS World University Rankings.

4TH

We're ranked fourth in the UK for research power, based on research quality and breadth.*

83%

The majority of our research – 83 per cent – is considered world leading or internationally excellent.*

32ND

We're ranked 32nd in the world for the employability of our graduates.†

£268m

In 2015/16 we won £268 million in competitive research grants.

21

We're associated with 21 Nobel Prize winners, including physicists Peter Higgs, Charles Barkla and Max Born, medical researcher Peter Doherty and biologist Sir Paul Nurse.

13TH

We're ranked 13th in the world's most international universities.‡ Students from two-thirds of the world's countries study here.

* Research Excellence Framework (REF) 2014

† Latest Emerging Global Employability University Ranking

‡ Times Higher Education: The World's Most International Universities 2017

 twitter.com/appliedinburgh

 facebook.com/appliedinburgh

 youtube.com/edinburghuniversity

 instagram.com/appliedinburgh

Taught masters programmes

Our one-year, taught master of science (MSc) programmes consist of two semesters of taught courses, followed by a research project and a dissertation.

www.ed.ac.uk/pg/913

Advanced Chemical Engineering

MSc 1 yr FT

Programme description

This programme will immerse you in the current developments in chemical engineering, through a combination of taught modules, workshops, a research dissertation, and a number of supporting activities delivered by the key experts in the field. The programme will develop from fundamental topics, including modern approaches to understanding properties of the systems on a molecular scale and advanced numerical methods, to the actual processes, with a particular emphasis on energy efficiency. Dissertation projects will require you to put acquired skills, in various areas, into practice in application to actual chemical engineering problems.

Programme structure

The programme develops from compulsory courses, emphasising modern computational techniques and research methods, to a range of options. It is complemented by a strong management and economics component.

SEMESTER 1 COURSES PREVIOUSLY OFFERED INCLUDE:

Numerical Methods for Chemical Engineers; Introduction to Research Methods; Molecular Thermodynamics. Plus up to two option courses from *Chemical Reaction Engineering; Fire Science and Fire Dynamics; Group Design Project (Power Station with Carbon Capture and Storage).*

SEMESTER 2 COURSES PREVIOUSLY OFFERED INCLUDE:

Introduction to Research Methods; plus five or six courses from: *Polymers Science and Engineering; Nanotechnology; Supply Chain Management; Modern Economic Issues in Industry; Engineering in Medicine; Oil and Gas Systems Engineering; Adsorption; Technology and Innovation Management; Separation Processes; Batchwise and Semibatch Processing; Nanomaterials in Chemical and Biomedical Engineering.*

Career opportunities

Our graduates enjoy career opportunities in oil and gas, pharmaceuticals, food and drink, consumer products, banking and consulting industries. Recent employers of our graduates include BP, P&G, ExxonMobil, Mondelēz International, Doosan Babcock, Atkins, Safetec, Xodus Group, GSK, Diageo, Wood Group, Gilead Sciences, Jacobs, Halliburton, and Cavendish Nuclear. This range of potential employers means our graduates are well placed to find rewarding and lucrative careers. This MSc may also lead to further study, such as a PhD. With 94 per cent of our research activity rated world leading or internationally excellent in the Research Excellence Framework (REF) 2014, Edinburgh is the UK powerhouse in engineering.

Entry requirements

A UK 2:1 honours degree, or its international equivalent (www.ed.ac.uk/international/graduate-entry), in chemical engineering or a closely related field.

English language requirements

See page 24.

Fees and funding

For fees see page 24 and for funding information see page 26.

Programme contact

Tel +44 (0)131 651 3565

Email pgtenquiries@eng.ed.ac.uk

www.ed.ac.uk/pg/937

Electrical Power Engineering

MSc 1 yr FT

Programme description

This programme is designed to equip you with a broad and robust training in modern power engineering technologies, with a strong focus on renewable energy conversion and smart grids. Taught courses, workshops and a group design project, led by leading experts in the field, cover key topics in power systems, electrical machines and power electronics.

These include fundamental and emerging power engineering technologies; advanced numerical methods in application to electrical power engineering problems; modern power conversion components and systems; integration of renewable energy in the power system; distributed energy resources; electrical engineering aspects of energy storage; power, telecommunications and control aspects of smart grids; and research and innovation management techniques.

Programme structure

You will study two semesters of taught courses, followed by a research project leading to the submission of a dissertation applying your acquired skills to real problems in electrical power engineering.

SEMESTER 1 COURSES PREVIOUSLY OFFERED INCLUDE:

Power Electronics, Machines & Systems; Power Engineering Research Techniques; Energy & Environmental Economics; Technologies for Sustainable Energy.

SEMESTER 2 COURSES PREVIOUSLY OFFERED INCLUDE:

Power Conversion and Control; Power Systems Engineering & Economics; Distributed Energy Resources and Smart Grids; Electrical Power Engineering Dissertation.

Career opportunities

Graduates can be employed in the public or private sector, covering areas from generation to conversion and transmission of electrical power, design and manufacturing of power components and systems as well as energy policy and commerce. The MSc runs in close association with activities within the broader electrical engineering discipline of the School including networking events and industrial presentations. MSc graduates may also progress to PhD study at Edinburgh or elsewhere. In the 2014 UK Research Excellence Framework 94% of our engineering research was rated world leading or internationally excellent. The School has a very strong record in power engineering research and opportunities to progress to a PhD may become available to top graduates.

Entry requirements

A UK 2:1 degree, or its international equivalent (www.ed.ac.uk/international/graduate-entry), in electrical and/or electronic engineering. Other closely related backgrounds may be considered on a case-by-case basis.

English language requirements

See page 24.

Fees and funding

For fees see page 24 and for funding information see page 26.

Programme contact

Tel +44 (0)131 651 3565

Email pgtenquiries@eng.ed.ac.uk



www.ed.ac.uk/pg/669

Electronics

MSc 1 yr FT

Programme description

This programme offers distinct specialisation areas in electronics: analogue VLSI design, bioelectronics and analogue and digital systems. In analogue VLSI design, our facilities include a unique custom-designed analogue integrated circuit specifically designed to support laboratory-based teaching. Our advanced design and prototyping laboratories, advanced micro and nano fabrication facilities and state-of-the-art digital system laboratories use the latest industry-standard software tools. Alternatively, students may specialise in the emergent discipline of bioelectronics where our research and teaching interests include access to the fabrication facilities at the Scottish Microelectronics Centre. For students who wish to study a more general electronics programme including digital systems, a prescribed course selection is available.

Programme structure

This programme is run over 12 months, with two semesters of taught courses, including a small number of options, followed by a research project, leading to a masters thesis.

SEMESTER 1 COURSES PREVIOUSLY OFFERED INCLUDE:

Analogue IC Design; Analogue VLSI A; Discrete-Time Signal Analysis; Power Electronics; Principles of Microelectronic Devices; Digital Systems Laboratory A; Introduction to Bioelectronics; Biosensors.

SEMESTER 2 COURSES PREVIOUSLY OFFERED INCLUDE:

Digital System Design; Digital Systems Laboratory; Research Project Preparation; Electronic/Electrical Engineering System Design; Analogue VLSI B; Sigma Delta Converters; Analogue Circuit Design; Microfabrication Techniques; Biosensors and Instrumentation; Lab-on-Chip Technologies; Biomedical Imaging Techniques; Embedded Mobile and Wireless Systems; Modern Economic Issues in Industry; Technology and Innovation Management.

Career opportunities

You will gain practical experience in analogue and digital laboratories and become familiar with current industry standard design software and environments. Having been exposed to concepts such as design re-use and systems on chip technology, you will be able to cooperate with others in electronic system design. Recent graduates are now working as applications, design, field, test and validation engineers for employers such as BMW, Guangzhou Hangxin Avionics and Kongsberg Maritime.

Entry requirements

A UK 2:1 honours degree, or its international equivalent (www.ed.ac.uk/international/graduate-entry), in electronics or electrical engineering. We may also consider your application if you have appropriate professional experience.

English language requirements

See page 24.

Fees and funding

For fees see page 24 and for funding information see page 26.

Programme contact MSc Administrator

Tel +44 (0)131 650 7352

Email pgtenquiries@eng.ed.ac.uk

www.ed.ac.uk/pg/806

International Master of Science in Fire Safety Engineering

MSc 2 yrs FT

Programme description

This is a two-year programme in the Erasmus Mundus framework, coordinated by Ghent University, Belgium, in partnership with Lund University, Sweden, and the University of Edinburgh. Classes in Edinburgh focus on fire dynamics, fire safety engineering and structural design for fire. Classes in Ghent have a more general fire safety engineering focus and classes in Lund emphasise enclosure fire dynamics, risk analysis and human behaviour. Our Building Research Establishment (BRE) Centre for Fire Safety Engineering hosts bespoke equipment to support groundbreaking research and teaching, with combined thermal and mechanical loading and use of the latest image analysis techniques.

Programme structure

The four semesters are each worth 30 European Credit Transfer and Accumulation System (ECTS) credits. Changing study location after each semester lets you benefit from the expertise of each university.

SEMESTER 1 COURSES PREVIOUSLY OFFERED INCLUDE:

Students choose to study at either Ghent or Edinburgh.

Ghent University: *Introduction to Fire Dynamics; Basics of Structural Engineering; Thermodynamics, Heat and Mass Transfer; Explosions and Industrial Fire Safety.* **University of Edinburgh:** *Fire Science and Fire Dynamics; Fire Safety Engineering; Fire Safety, Engineering and Society; Engineering Project Management.*

SEMESTER 2 COURSES PREVIOUSLY OFFERED INCLUDE:

Lund University: *Advanced Fire Dynamics; Human Behaviour in Fire; Risk Assessment; Simulation of Fires in Enclosures.*

SEMESTER 3 COURSES PREVIOUSLY OFFERED INCLUDE:

Students choose to study at either Ghent or Edinburgh.

Ghent University: *Active Fire Protection I: Detection and Suppression; Active Fire Protection II: Smoke and Heat Control; Explosions and Industrial Fire Safety; Fire Safety Regulation; Passive Fire Protection; Performance-Based Design.* **University of Edinburgh:** *Fire Safety Engineering; Fire Science Laboratory; Structural Design for Fire; Finite Element Analysis for Solids.*

SEMESTER 4 COURSES PREVIOUSLY OFFERED INCLUDE:

The masters thesis is supervised by at least one of the partner universities.

Career opportunities

We aim to train the next generation of leaders in this field. There is great demand for fire safety engineers worldwide and as a graduate you will have gained relevant employment or enhanced career opportunities.

Entry requirements

A bachelors degree or recognised equivalent from an accredited institution (minimum three years' full-time study or 180 ECTS credits) in civil, structural, mechanical, electrical, chemical or industrial engineering; material sciences; chemistry; physics; applied physics; architecture; urbanism and spatial planning or a related discipline.

English language requirements

See page 24.

Fees and funding

www.imfse.ugent.be

For fees see page 24 and for funding information see page 26.

Programme contact Lies Decroos (IMFSE Administrator)

Tel +32 9 264 98 47

Email imfse@ugent.be

www.ed.ac.uk/pg/882

Sensor & Imaging Systems

MSc 1 yr FT

Programme description

This programme is run jointly by the universities of Edinburgh and Glasgow. It focuses on the principles, methods, techniques and technologies that underpin a vast range of needs in applications spanning research, industry and medicine. Sensing and sensor systems are essential for advances in research across all fields of physics, engineering and chemistry and can be enhanced when multiple sensing functions are combined into arrays to enable imaging.

Industrial applications of sensor systems are ubiquitous – from mass-produced sensors found in modern smartphones and cars to the state-of-the-art, specialist high-value sensors routinely used in oil and gas recovery, scientific equipment, machine tools, medical equipment and environmental monitoring.

Programme structure

This programme is run over 12 months. The first semester of taught courses is run at the University of Glasgow and the second at the University of Edinburgh, followed by a research project, carried out at either university, leading to a masters thesis.

SEMESTER 1 COURSES PREVIOUSLY OFFERED INCLUDE:

University of Glasgow: *Sensing and Imaging; Imaging and Detectors; Detection and Analysis of Ionising Radiation; Circuits & Systems;* Option course in physics or engineering.

SEMESTER 2 COURSES PREVIOUSLY OFFERED INCLUDE:

University of Edinburgh, two compulsory courses: *Applications of Sensor and Imaging Systems; Research Project Preparation.* Two to four option courses in engineering and/or chemistry, e.g. *Biophysical Chemistry; Biosensors and Instrumentation; Lab-on-Chip Technologies; Biomedical Imaging Techniques; Microfabrication Techniques.*

Career opportunities

Sensor and imaging systems underpin a vast range of societal, research and industrial needs. This is an industry-focused programme, designed for students looking to develop the skills and knowledge that will open up opportunities in the many companies developing sensor and image based solutions.

Entry requirements

A UK 2:1 honours degree, or its international equivalent (www.ed.ac.uk/international/graduate-entry), in engineering, physics, chemistry or another relevant physical science. Entry is competitive so we would prefer a UK first class honours degree, or a UK 2:1 honours degree supported by an MSc degree, or their international equivalents. We may also consider your application if you have other qualifications or experience or a background in another field.

English language requirements

See page 24.

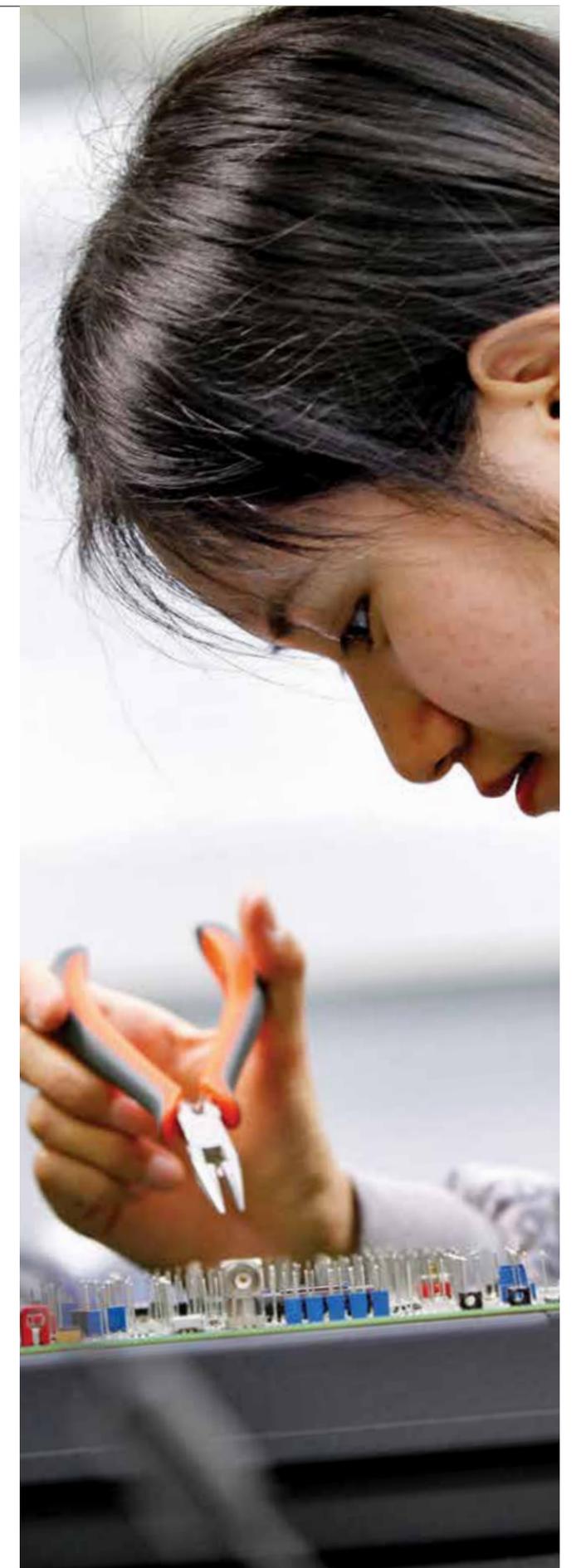
Fees and funding

For fees see page 24 and for funding information see page 26. Prestigious Scottish Funding Council (SFC) awards are available to up to 20 high calibre applicants for this programme. The SFC has selected this programme in recognition of the high demand for students with such qualifications. The awards cover all tuition costs.

Programme contact Postgraduate Admissions Team

Tel +44 (0)141 330 4515

Email pgadmissions@glasgow.ac.uk



www.ed.ac.uk/pg/20

Signal Processing & Communications

MSc 1 yr FT (2 yrs PT available for UK/EU students)

Programme description

This programme provides graduates and working professionals with a broad training in signal processing and communications. It is suitable for recent graduates who wish to develop the specialist knowledge and skills relevant to this industry and is also suitable as advanced study in preparation for research work in an academic or industrial environment or in a specialist consultancy organisation. Engineers or other professionals wishing to participate in the MSc programme may do so on a part-time basis.

Our students gain a thorough understanding of theoretical foundations as well as advanced topics at the cutting edge of research in signal processing and communications, including compressive sensing, deep neural networks, wireless communication theory, and numerical Bayesian methods. The MSc project provides a good opportunity for students to work on state-of-the-art research problems in signal processing and communications.

Programme structure

This programme is run over 12 months, with two semesters of taught courses followed by a research project leading to a masters thesis.

SEMESTER 1 COURSES PREVIOUSLY OFFERED INCLUDE:

Discrete-Time Signal Analysis; Digital Communication Fundamentals; Probability, Estimation Theory and Random Signals; Image Processing; Signal Processing Laboratory.

SEMESTER 2 COURSES PREVIOUSLY OFFERED INCLUDE:

Adaptive Signal Processing; Advanced Coding Techniques; Advanced Wireless Communication; Array Processing and MIMO Systems; Advanced Concepts in Signal Processing; Pre-Dissertation Project in Signal Processing and Communications; Signal Processing and Communications: Project and Thesis.

Career opportunities

With our excellent employability record and international reputation, the University of Edinburgh is a reliable choice for developing your engineering career. This programme will appeal to graduates who wish to pursue a career in an industry such as communications, radar, medical imaging or anywhere else signal processing is applied.

Entry requirements

A UK 2:1 honours degree, or its international equivalent (www.ed.ac.uk/international/graduate-entry), typically in electrical engineering with a specialisation in signal processing and/or communications. We will also consider your application if you have a background in a related field, such as computer science, physics or mathematics. Entry into this high-level programme is competitive, so we expect high grades in fundamentals, such as mathematics, signals and systems, probability and statistics, and communications and signal processing.

English language requirements

See page 24.

Fees and funding

For fees see page 24 and for funding information see page 26.

Programme contact MSc Administrator

Tel +44 (0)131 650 7352

Email pgtenquiries@eng.ed.ac.uk

www.ed.ac.uk/pg/423

Structural & Fire Safety Engineering

MSc 1 yr FT

Programme description

Innovative design allows more interesting and functional architecture but challenges traditional concepts of fire safety. To respond to these demands takes specialist knowledge and advanced skills in engineering analysis. This programme covers the fundamentals of fire science, including laboratory classes, fire safety engineering and relevant structural engineering topics, such as finite element methods.

You will gain knowledge of the critical issues in structural fire safety engineering, and an understanding of relevant fire and structural behaviours. You will become familiar with performance-based approaches to design and have an awareness of the capabilities – and limitations – of relevant advanced modelling methods for structures and fire. Our Building Research Establishment (BRE) Centre for Fire Safety Engineering hosts bespoke equipment to support groundbreaking research and teaching, with combined thermal and mechanical loading and use of the latest image analysis techniques.

This programme is fully accredited by the Joint Board of Moderators: www.jbm.org.uk

Programme structure

You study two semesters of taught courses, a research project and thesis.

SEMESTER 1 COURSES PREVIOUSLY OFFERED INCLUDE:

Fire Science and Fire Dynamics; Structural Design for Fire; Finite Element Analysis for Solids; Fire Investigation and Failure Analysis; Thin-Walled Members and Stability; Fire Safety, Engineering and Society; State-of-the-Art Review in Fire Safety Engineering.

SEMESTER 2 COURSES PREVIOUSLY OFFERED INCLUDE:

Fire Science Laboratory; Fire Safety Engineering Analysis and Design; The Finite Element Method; Structural Dynamics and Earthquake Engineering; Pre-Dissertation Project in Fire Safety Engineering; Dissertation.

Career opportunities

Internationally, there is great demand for graduates in this field, with expertise in structural fire safety engineering particularly sought after as performance-based design expands. All of our previous graduates are in relevant employment, with the majority working in fire teams at engineering consultancies.

Entry requirements

A UK 2:1 honours degree, or its international equivalent (www.ed.ac.uk/international/graduate-entry), in civil engineering or a related subject. We may also consider your application if your background is in another field.

English language requirements

See page 24.

Fees and funding

For fees see page 24 and for funding information see page 26.

Programme contact MSc Administrator

Tel +44 (0)131 650 7352

Email pgtenquiries@eng.ed.ac.uk

See also...

Some of our taught masters are related to those in other Schools and Colleges. You may be interested in programmes offered by the College of Medicine & Veterinary Medicine, or the Schools of Biological Sciences, Chemistry, GeoSciences, Informatics, Mathematics or Physics & Astronomy.

www.ed.ac.uk/studying/prospectus-request

www.ed.ac.uk/pg/22

Sustainable Energy Systems

MSc 1 yr FT
PgDip 9 mths FT

Programme description

This internationally renowned MSc and postgraduate diploma (PgDip) are programmes based within a world leading renewable energy research group that equips graduates and professionals with a broad and robust training. Wind, marine and solar energy technologies are covered, as well as the wider environment in which they fit, including: resource assessment; energy production, delivery and consumption; efficiency; sustainability; economics, policy and regulation; and grid/off-grid systems. In addition, our MSc students actively engage in research as part of their dissertation projects either within the Institute for Energy Systems or with industry, with some joining our PhD community afterwards.

This programme is accredited as counting towards further learning (FL), as a requisite in the educational base for a Chartered Engineer (CEng). The programme is also affiliated with the University's Global Environment & Society Academy: www.ed.ac.uk/global-environment-society

Programme structure

This programme is run over 12 months, with two semesters of taught courses followed by a research project leading to a masters thesis.

COMPULSORY COURSES PREVIOUSLY OFFERED INCLUDE:

Semester 1: *Technologies for Sustainable Energy; Energy and Environmental Economics; Sustainable Energy Contexts; Either Electrical Engineering Fundamentals of Renewable Energy or Mechanical Engineering Fundamentals of Renewable Energy.*

Semester 2: Students with an electrical or power engineering background must study: *Marine Energy; Principles of Wind Energy; Solar Energy and Photovoltaic Systems.* Students without an electrical or power engineering background must study: *Elements of Power Systems Operations;* plus two from *Marine Energy; Principles of Wind Energy; Solar Energy and Photovoltaic Systems.*

OPTION COURSES PREVIOUSLY OFFERED INCLUDE:

Depending on quotas and timetabling, we can offer further courses from the Schools of Engineering, GeoSciences, and Social & Political Science, from Edinburgh School of Architecture & Landscape Architecture (ESALA), and from Scotland's Rural College (SRUC).

Career opportunities

Graduates go on to a wide range of activities in industry, public organisations or academia. The MSc has well-established links with industry, with many graduates finding employment with leading national and international companies involved with energy, consultancy and engineering. Recent graduates are now working as civil, structural, automotive, subsea and electrical engineers and as power systems, energy and environment and renewable energy consultants. Employing firms include Arup, Alstom, Avery Dennison, GE, Schneider, SSE, Scottish Power and many others.

Entry requirements

A UK 2:1 honours degree, or its international equivalent (www.ed.ac.uk/international/graduate-entry), in engineering or physics. If you apply with a background in another field, you may be accepted if you hold a UK first class honours degree, or its international equivalent, and have studied mathematics to first year undergraduate level, including vectorial calculus (gradients, curls, etc.), complex algebra and analysis. You must also be able to demonstrate a strong interest in the energy sector.

English language requirements

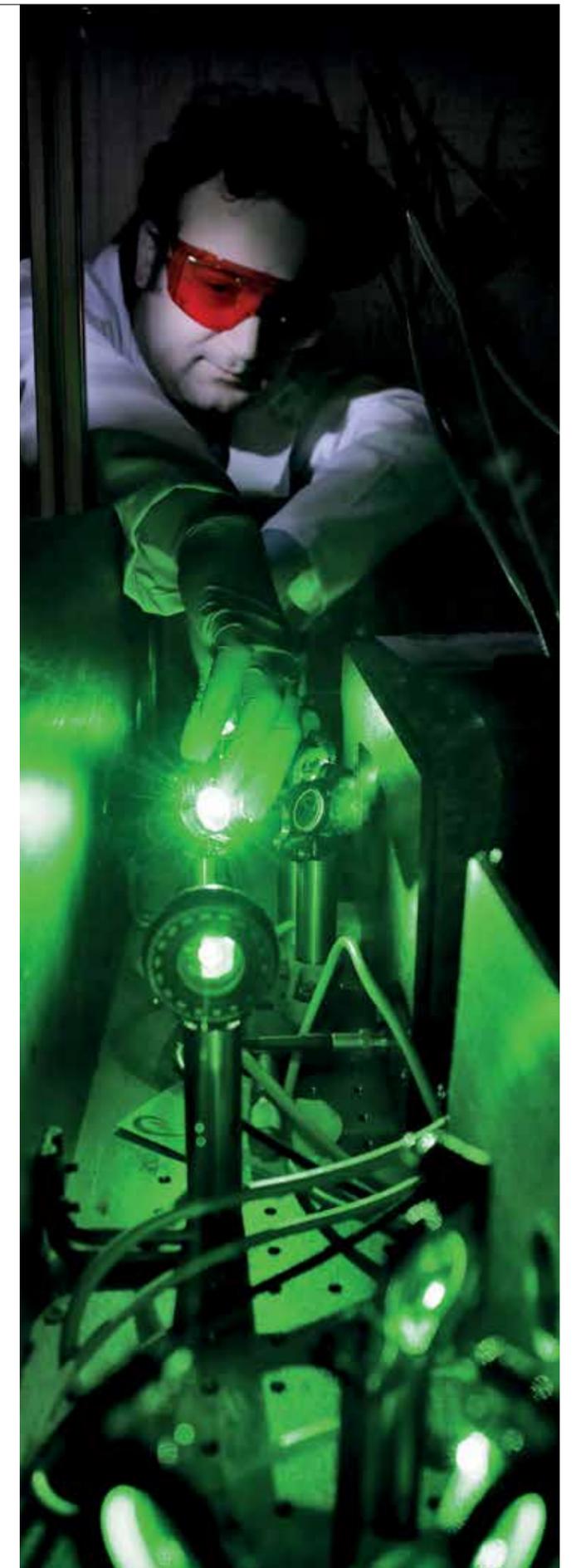
See page 24.

Fees and funding

For fees see page 24 and for funding information see page 26.

Programme contact MSc Administrator

Tel +44 (0)131 650 7352



Research at the School of Engineering

We offer a comprehensive range of exciting research opportunities through a choice of postgraduate programmes: PhD, EngD, MPhil and MSc by Research. We also provide a range of services to support you to develop your research project to its full potential.

PhD

As a PhD candidate you pursue a research project under continuous guidance, resulting in a thesis that makes an original contribution to knowledge. In the School of Engineering you will be linked to two academic supervisors. If your project is industrially sponsored, you will also be linked to an industrial supervisor.

Postgraduate research students work within our research institutes (see page 12 and 14), in bioengineering, digital communication, energy systems, infrastructure and environment, integrated micro & nano systems, and materials and processes. These institutes comprise members of staff from four disciplines: chemical engineering; civil and environmental engineering; electronics and electrical engineering; and mechanical engineering.

PhD with Integrated Study

The PhD with Integrated Study (PhD-IS) is a relatively new four-year doctoral programme with a 1+3 structure, which means you will complete one year of training, designed to develop your research capabilities, then undertake three years of PhD research. The PhD-IS is offered by the Engineering and Physical Sciences Research Council (EPSRC) Centre for Doctoral Training in Integrative Sensing and Measurement. It aims to equip engineers and scientists with the skills, knowledge and confidence to tackle today's evolving issues and future challenges: goo.gl/cdel89

EngD

This is a four-year doctoral-level research and training programme equivalent to a PhD but achieved through research, which is much more industrially focused, and designed to produce graduates who have a sound understanding of the business implications of industrial research activity. Professional doctorates are specialist qualifications aimed at professional development.

MSc by Research

An MSc by Research is based on a research project tailored to a candidate's interests. It lasts one year full time or two years part time. The project can be a shorter alternative to an MPhil or PhD, or a precursor to either – including the option of an MSc project expanding into MPhil or doctorate work as it evolves. It can also be a mechanism for industry to collaborate with the School.

MPhil

The Master of Philosophy (MPhil) resembles a PhD but generally takes two years instead of three and does not carry the same requirement for an original contribution to knowledge. You pursue your individual research project under supervision, submitting your thesis at the end of the project.

Entry requirements

A UK 2:1 honours degree, or its international equivalent (www.ed.ac.uk/international/graduate-entry), in an appropriate subject, or relevant qualifications and experience. Please contact us to check the specific entry requirements for your programme before you apply.

Research support

The development of transferable skills is a vital part of postgraduate training and a vibrant, interdisciplinary training programme is offered to all research students by the University's Institute for Academic Development (IAD). The programme concentrates on the professional development of postgraduates, providing courses directly linked to postgraduate study (for example *Thesis Workshop* and *Paper Production*) and future careers (for example *Career Planning* and *Team Development*).

Courses run by the IAD are free and have been designed to be as flexible as possible so that you can tailor the content and timing to your own requirements.

More information:
www.ed.ac.uk/iad/postgraduates

Showcase your work

Every year, the School of Engineering's Graduate School organises a postgraduate research conference to showcase the research carried out by students across the research institutes. Our researchers are strongly encouraged to present their research at conferences and in journals during the course of their PhD. They are also encouraged and supported to attend transferable skills courses provided by organisations such as the EPSRC.

Business development

The role of our business development team is to help form industry partnerships, including the sponsoring of research, to enable the commercialisation of University intellectual property and successful technology transfer.

Edinburgh Innovations, the University's research and commercialisation office, provides a complete range of services for researchers, inventors, consultants and entrepreneurs in the University's academic community.

More information:
www.research-innovation.ed.ac.uk

Career prospects

Research graduates enter a wide range of fields including automotive, communications, defence, medical imaging, engineering consultancy, construction, renewable energy and the semiconductor industry. Many go on to further research. Opportunities for our PhD graduates include postdoctoral fellowships, lecturing roles and research contracts in universities, research institutes or industry.



We cover the entire field of engineering through our six specialist research institutes.



THE UNIVERSITY of EDINBURGH

Case study: Edinburgh's research with impact

Informing the safety of iconic constructions

True fire resistance, along with an understanding of just how fires grow and spread, is key to preventing tragedies. The University's BRE Centre for Fire Safety Engineering focuses on the two main areas of building fire safety – detection, containment and suppression of fires, and performance-based design. Over 40 years, the Centre and its committed group of researchers have transformed the way the world regards structural design for fire.

Project background

Engineering consultancy giant Arup faces the challenge of fire safety in every building project it takes on. For advice and expertise in this area, the company calls on the BRE Centre, which leads the way in innovative research and building methodologies. Drawing on the tradition of world leading academic and practical expertise established by its distinguished founders and teaching staff, the Centre entered into collaboration with Arup on the design of London's Heron Tower to provide the designers with the tools they needed to analyse fire initiation, growth, and spread, and create a structural response appropriate to a large, multi-storey building with open plan compartments and a central atrium.

Project results

Without the information provided by the Edinburgh researchers, Heron Tower could not have been approved or built. The Centre's expertise is also sought by international building and fire code committees including the American Concrete Institution, the British Standards Institute, and the International Council on Tall Buildings and Urban Habitat. The BRE Centre has created an entirely new type of design consultancy in performance-based structural fire engineering, which is being applied to great advantage by major international engineering firms in UK buildings and further afield.

The Centre and its committed group of researchers have transformed the way the world regards structural design for fire.

See more online: www.ed.ac.uk/research/impact

Research opportunities

www.ed.ac.uk/postgraduate/degrees

Engineering

PhD 3 yrs FT (6 yrs PT available for UK/EU students)
MPhil 2 yrs FT (4 yrs PT available for UK/EU students)

Programme aims

This programme will train you as a researcher and allow you to develop advanced techniques and in-depth knowledge in a specialist area of engineering and a broad range of transferable skills.

You will carry out independent research, resulting in an original contribution to knowledge in your chosen area, working under the guidance of your supervisors in one of our research institutes. To be awarded a PhD, you will submit a thesis and defend it in an assessed oral exam.

Programme structure

You will be required to discuss, and regularly review, your training needs with your supervisor and attend a balanced selection of training courses and personal development including compulsory inductions; final year undergraduate or postgraduate courses (if appropriate); transferable skills courses; and your research institute's seminar series, talks, workshops and conferences.

In agreement with your supervisors, you will present your work at relevant conferences and workshops and publish your research in appropriate journals. You will attend the School's annual research conference and present your own work there in Year 2.

During the programme you will write and submit for approval a project plan, reports for your annual progression reviews, and a thesis plan. While your thesis is expected to be submitted towards the end of Year 3, a 12-month submission period is permitted for your write-up.

Other opportunities include conducting tutoring or demonstrating (after mandatory training), participating in relevant committees, attending research seminars, and contributing to academic life, for example through the graduate society, or at open days and outreach activities.

Research environment

Our world-leading research is conducted through our research institutes:

Institute of Bioengineering (IBioE)

IBioE connects engineering, physical sciences, biology and medicine, for innovative diagnostic and therapeutic biomedical devices and technologies. Research themes include:

- Synthetic biology – to design and construct (e.g. to 'engineer') biological devices and systems, often at cellular level. Applications range from therapeutic to environmental.
- Tissue engineering – the production of 3D or 2D scaffolds or guidance cues for biological cells. Applications are largely therapeutic and also include new forms of lab-on-chip technology.
- Biomedical modelling and measurement – understanding biological materials through modelling and measurement for applications in, for example, prosthetics, prediction of failure in blood vessels and the behaviour of bone with ageing. We also study the behaviour of biological materials experimentally and in most cases, non-invasively (e.g. via Raman spectroscopy and CARS microscopy).
- Biomedical devices and sensors – working with colleagues in chemistry, we develop sensors on silicon for simple biological parameters (e.g. oxygen concentration) along with sensors of specific biomarkers of disease and therapy.

Institute for Digital Communications (IDCOM)

IDCOM is the UK's leading research institute in signal processing and communications and is home to the LiFi research and development centre. We have three major centres of activity: signal processing, communications systems and tomographic imaging. Our programme of research delivers world leading research in signal and image processing and communications from fundamental theoretical and algorithmic work through to its translation to specific audio, imaging, radar/sonar, and communications applications. The institute has excellent research facilities, including state-of-the-art computing systems and laboratories for agile tomography, and audio signal processing, as well as the LiFi research and development centre for visible light communications. Internationally recognised for our research on communications systems and signal processing, we offer research topics including: green radio; visible light communications; cognitive radio; compressive sensing; distributed sensor signal processing; and agile tomography. IDCOM holds the only UK Research Council platform award in sensor signal processing, in collaboration with the joint research institute in signal and image processing at Heriot-Watt University, recognising our world leading research status.

Institute for Energy Systems (IES)

IES helps shape tomorrow's difficult energy decisions in decarbonising society. It continues a long line of world leading innovation by Edinburgh researchers, including the 1970s 'Duck' wave energy converter, invented by Stephen Salter – now Emeritus Professor of Engineering Design. Our research covers all aspects of the low carbon energy chain:

- resource modelling, impact of climate change, wind, wave, tidal, and solar;
- energy, electrical power conversion, energy storage, carbon capture;
- biofuels and delivery into the electrical network; and
- low carbon vehicles – developing more efficient internal combustion engines.

Institute for Infrastructure & the Environment (IIE)

IIE is among the leading centres of civil and environmental engineering research in the UK. The institute seeks new technologies to solve real-world problems in order to promote sustainability. Key research areas include behaviour and design of structures in fire and other extreme events; fire science and fire safety engineering; shells and containment structures; nonlinear finite element modelling of complex structures and structural collapses; mechanics and transport of granular materials and multiphase media; computational mechanics and bio-mechanics; fibre-reinforced polymer composites in structural strengthening and repair; high-speed rail; intelligent infrastructure and non-destructive evaluation; sustainable water and wastewater treatment technologies; water supply; and waste management and resource recovery. IIE has excellent laboratory and computing capabilities, including the latest facilities and instrumentation for experimental and computational research in structures, granular solids, fire safety engineering, non-destructive testing and environmental engineering.

continued...



Institute for Integrated Micro & Nano Systems (IMNS)

IMNS brings together researchers from integrated-circuit design, system-on-chip design, image-sensor design, bioelectronics, micro/nano-fabrication, microelectromechanical systems (MEMS), micromachining, neural computation and reconfigurable and adaptive computing. Other research interests include low-level analogue, low-power, adaptive and bio-inspired approaches, system-on-chip computing, and applications from telecommunications to finance and astronomy. There is also a research focus on integrating CMOS microelectronic technology with sensors and microsystems/MEMS to create smart sensor systems. We have a strong and growing interest in applications relating to the life sciences and medicine, particularly on bioelectronics, biophotonics and bio-MEMS. IMNS has laboratory facilities that are unique within the UK, including an advanced silicon and MEMS micro-fabrication capability coupled with substantial design and test resources. The institute has an excellent reputation for commercialising technology.

Institute for Materials and Processes (IMP)

IMP brings together researchers from materials science and chemical, mechanical and bio-engineering, conducting world-class research into every conceivable kind of material. Work covers the design, synthesis and processing of materials, as well as biomedical and process engineering. IMP has one of the UK's largest carbon capture engineering research groups, and particular strength in biomedical and biological engineering. The institute has excellent laboratory facilities, including the latest instruments for research in adsorption, biomedical engineering, conservation materials science, high pressure and temperature advanced materials synthesis, ice mechanics, and particular strength in multiphase flows and multiscale modelling. We provide high-quality training in research.

Institute for Multiscale Thermofluids (IMT)

IMT is our newest research institute. It works at the forefront of research in multiphase, interfacial, and reacting flows; bridging the time and spatial scales between molecular processes and technological devices. The institute covers three different yet overlapping research themes:

- Non-continuum and non-equilibrium fluid mechanics
- Multiphase flows, interfaces, and phase change from nano- to macro-scales
- Multiphase, interfacial, and chemically reacting flows at the macro scale.

IMT has world-class experimental facilities including a low-carbon combustion lab, multiphase flows with phase change, and state-of-the-art modelling expertise in multiscale and multiphase modelling.

English language requirements

See page 24.

Fees and funding

For fees see page 24 and for funding information see page 26.

Contact

Tel +44 (0)131 651 7213

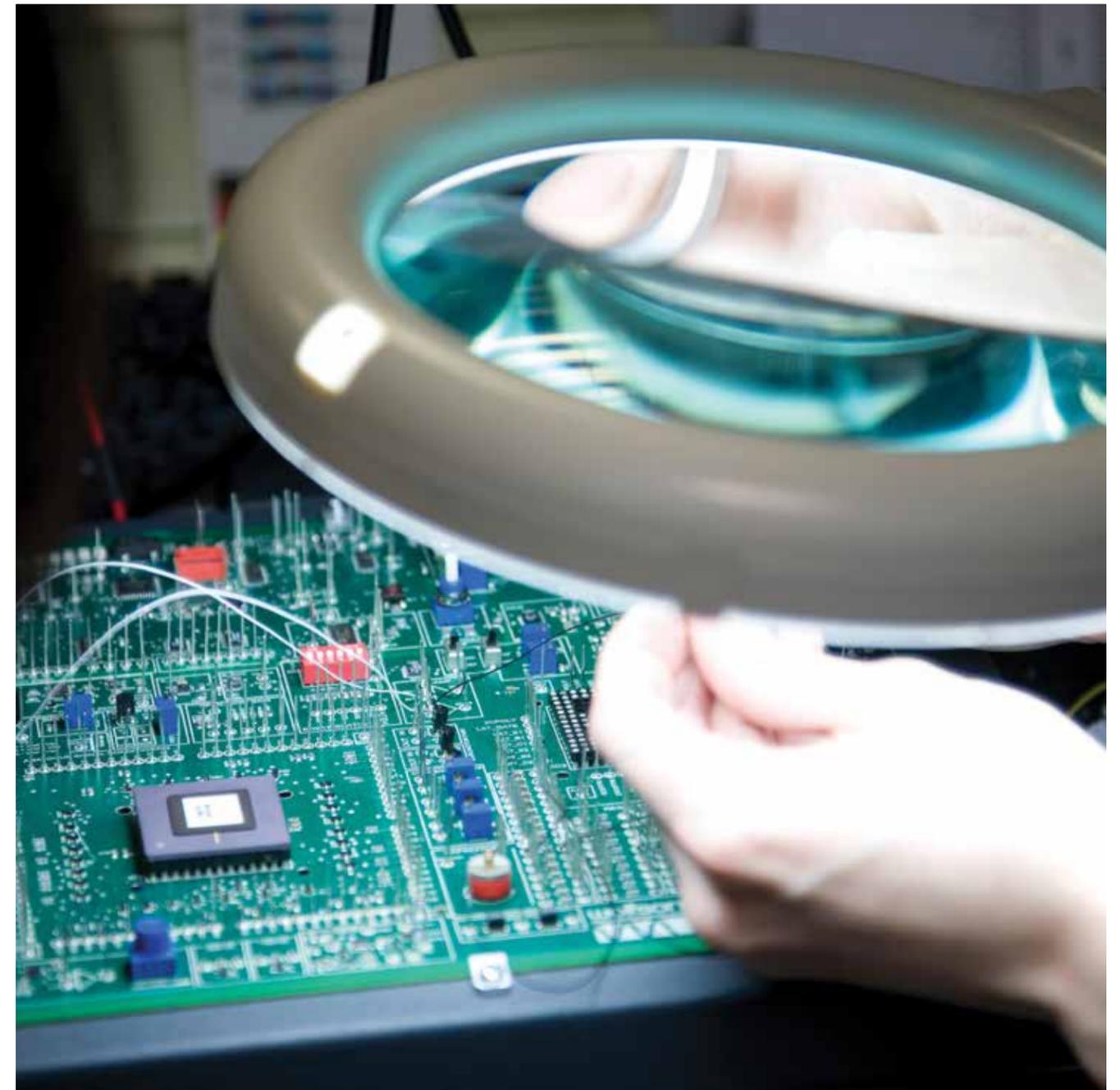
Email enggradoffice@ed.ac.uk

The University is piloting PhDs by online learning. If you're interested in studying with us this way, we're keen to investigate possibilities in some of our areas of research.

**MSC BY RESEARCH PROGRAMMES
1 YR FT (2 YRS PT AVAILABLE FOR UK/EU STUDENTS)**

In addition, our research institutes offer the following MSc by Research programmes:

- **Bioengineering:** www.ed.ac.uk/pg/873
- **Digital Communications:** www.ed.ac.uk/pg/24
- **Energy Systems:** www.ed.ac.uk/pg/25
- **Infrastructure & the Environment:** www.ed.ac.uk/pg/26
- **Integrated Micro & Nano Systems:** www.ed.ac.uk/pg/27
- **Materials & Processes:** www.ed.ac.uk/pg/28

**See also...**

Much of our research is interdisciplinary and collaborative. You may be interested in programmes offered by the College of Medicine & Veterinary Medicine, the Schools of Biological Sciences, Chemistry, GeoSciences, or Informatics, or Edinburgh College of Art, which hosts the Edinburgh School of Architecture & Landscape Architecture.

www.ed.ac.uk/studying/prospectus-request

Taught professional doctorates

The professional engineering doctorate (EngD) is a specialist qualification aimed at professional development. The School of Engineering is home to two professional doctorate programmes; one in offshore renewable energy and one in sensor and imaging systems. These training and research programmes are equivalent in standing to a conventional PhD but are aimed at students who want a research career in industry.

You will complete a broad-based, masters level training programme, then go on to carry out research while working directly with a company.



www.ed.ac.uk/pg/785
www.idcore.ac.uk

Offshore Renewable Energy

EngD 4 yrs FT

Programme description

The Industrial Doctoral Centre for Offshore Renewable Energy (IDCORE) is a partnership of the Universities of Edinburgh, Strathclyde and Exeter, together with the Scottish Association for Marine Science and the research association HR Wallingford.

IDCORE's four-year engineering doctorate programme is a doctoral-level research and training programme, equivalent in academic standing to a conventional PhD, but achieved through research that is much more industrially focused. It is designed to produce graduates who have a sound understanding of the business implications of industrial research. EngD students follow a programme based on three elements: postgraduate-level training; transferable skills and leadership; and research.

Programme structure

You will spend the first two semesters attending an intensive programme of 12 taught courses, delivered by internationally renowned academic staff from the partner universities. These first two semesters provide you with the skills required to get started on your research and to succeed in an industry environment. Practical courses teach important laboratory and fieldwork skills, while a group design project helps you develop teamworking skills and apply your knowledge.

Following this initial period of teaching, you will join a sponsoring company to work as a researcher for the rest of the programme.

The industrial research is supplemented by summer schools delivered in Oban, Wallingford and Falmouth, and online integrated studies in management, business, innovation, enterprise and entrepreneurship.

At the end of the research work you will deliver either a doctoral thesis or a portfolio of related project work that is examined for the award of an EngD in Offshore Renewable Energy, which is a joint degree from the Universities of Edinburgh, Exeter and Strathclyde.

Funding

A scholarship that covers fees and a stipend is available for suitably qualified and eligible applicants. There are normally 10 of these scholarships available for each intake of students and they are awarded competitively. Full awards (stipend and fees) are available for EU citizens who have been living in the UK for at least three years before the start of the programme. Other EU candidates are eligible for a fees-only award if they are ordinarily resident in a member state of the EU. There is a small quota of full studentships for exceptional EU and international candidates. Applications from self-funded candidates will also be considered.

Entry requirements

A UK first-class honours degree, or its international equivalent (www.ed.ac.uk/international/graduate-entry). We will also consider your application if you have a UK 2:1 honours degree and an MSc degree with distinction, or their international equivalents, and substantial relevant work experience. We expect you to have a good understanding of one or more branches of science or engineering and some relevant research experience.

Eligibility

United Kingdom Border Agency (UKBA) regulations now mean we can accept self-funded overseas students who need a CAS for a Tier 4 Visa.

English language requirements

See page 24.

Fees and funding

For fees see page 24 and for funding information see page 26.

Programme Director Professor David Ingram
Programme Administrator Vanessa McCorquodale
Email info@idcore.ac.uk

www.ed.ac.uk/pg/905
www.censis.org.uk/skills/engd/

Sensor & Imaging Systems

EngD 4 yrs FT

Programme description

Sensor and imaging systems (SIS) are central to modern life, and appear in fields as diverse as transport, biomedicine, agriculture and environmental monitoring. The Engineering Doctorate in Sensor & Imaging Systems is a vocational programme of leading-edge research for industry in this field. Academically equivalent to a PhD, the EngD emphasises research in a commercial environment, supplemented by masters-level technical training and MBA-style business courses. Projects all have an industry sponsor and you will spend up to 75 per cent of your time working on-site with that company. EngD students, known as Research Engineers (REs), work closely with the sponsoring company, under the direction of an industrial supervisor and an academic supervisor from the University.

Programme structure

You will undertake two semesters of research-focused training, delivered by internationally renowned academic staff. The first semester is based in Glasgow and the second in Edinburgh. The curriculum has a substantial overlap with that of the EPSRC Centre for Doctoral Training in Integrative Sensing & Measurement and much of the training involves working together as a cohort or in smaller groups. It includes:

- the fundamentals and applications of sensor and imaging systems;
- focused practical courses on laboratory skills; and
- creativity, dissemination, advocacy, enterprise and transferable skills.

This is followed by a 40-month research project, based in a sponsoring company, and business and management courses offered by Heriot-Watt University's Edinburgh Business School. You will normally be matched with a company and project when your offer of a place is made. Projects reflect varied applications of sensing and measurement, across a range of sensing modalities – physical, chemical, mechanical, optical and more.

Funding

Suitably qualified and residentially eligible students receive an award comprising tuition fees, an enhanced tax-free student stipend and funding to support training, conference attendance and travel. Self-funded applicants will also be considered.

Career opportunities

SIS meets a range of societal, research and industrial needs. Sensing is vital for advances in capability across all fields of physics, engineering and chemistry. It is enhanced when individual sensing units are configured in arrays to enable imaging or if multiple sensing functions are integrated into a single smart system. Industrial SIS applications are ubiquitous: from mass-produced sensors found in modern smartphones and automobiles to the state-of-the-art, specialist, high-value sensors routinely used in oil and gas recovery, scientific equipment, machine tools, medical equipment and environmental monitoring.

Entry requirements

A UK 2:1 honours degree or its international equivalent (www.ed.ac.uk/international/graduate-entry), in a relevant science or engineering discipline. Entry is competitive, so we would prefer a UK first class honours degree, or its international equivalent, in engineering, physics, chemistry or another relevant physical science. We may also consider your application if you have other qualifications or experience, or a background in another field.

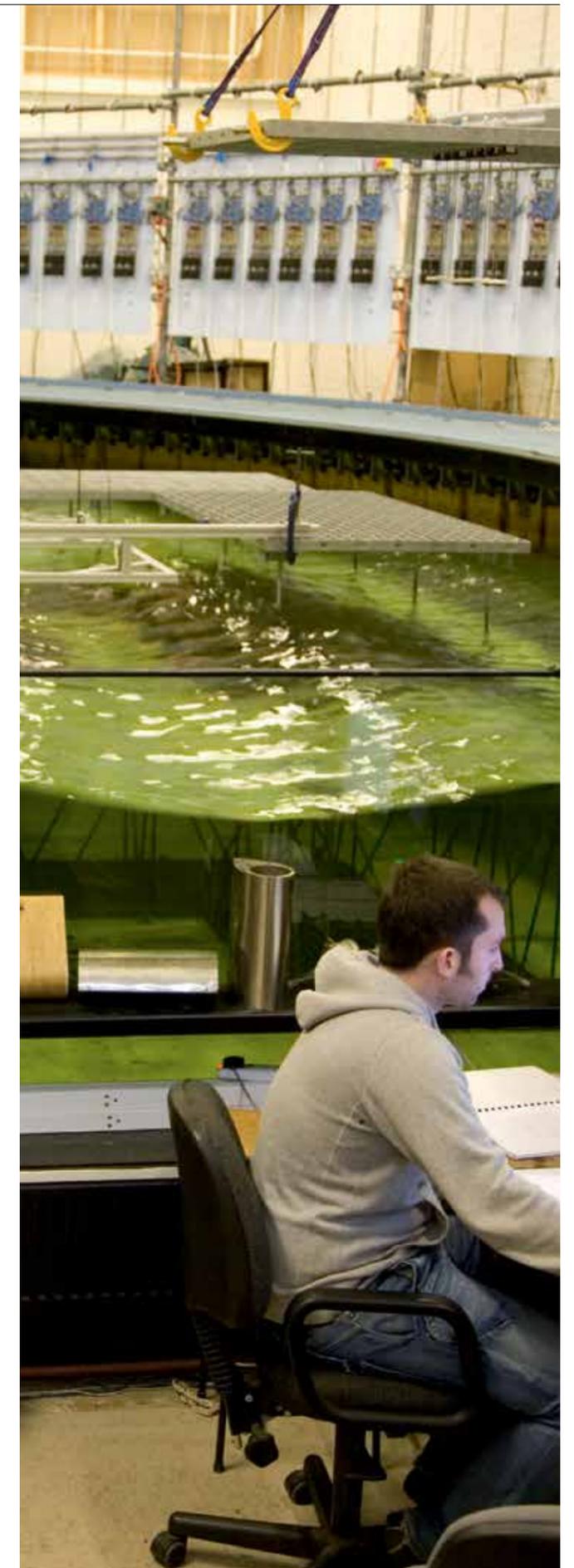
English language requirements

See page 24.

Fees and funding

For fees see page 24 and for funding information see page 26.

Programme Director Doctor Tony Kelly (anthony.kelly@glasgow.ac.uk)
Programme Administrator Sian Williams, CENSIS (sian.williams@censis.org.uk)
Edinburgh enquiries Professor Ian Underwood (i.underwood@ed.ac.uk)



PhD with Integrated Study

This four-year doctoral programme has a 1+3 structure, which means you will complete one year of training to develop your research capabilities, then three years of PhD research.

www.ed.ac.uk/pg/896
<https://goo.gl/f5TU3S>

Integrative Sensing & Measurement

PhD with Integrated Study 4 yrs FT

Programme description

Sensing and measurement are fundamental scientific abilities that impact all aspects of modern life and have revolutionised areas as diverse as transport, biomedicine, agriculture and environmental monitoring.

This PhD with Integrated Study is carried out within the Engineering and Physical Sciences Research Council (EPSRC) Centre for Doctoral Training in Integrative Sensing and Measurement (CDT-ISM), which aims to equip engineers and scientists with the skills, knowledge and confidence to tackle today's evolving issues and future challenges.

The CDT is supported internationally by a range of universities, research labs, and companies offering support and collaboration, including Selex, Thales, ST Microelectronics and Optos.

Programme structure

We offer one year of research-focused training, delivered by internationally renowned academic staff. The first semester, based in Glasgow, focuses on fundamentals and the second semester, based in Edinburgh, focuses on applications. You will develop the skills necessary to be effective and to prosper in a research environment. Much of the training involves working together as a cohort or in smaller groups. It includes:

- the fundamentals and applications of sensor and imaging systems;
- focused practical courses on laboratory skills; and
- creativity, dissemination, advocacy, enterprise and other transferable skills.

This is followed by a mini research project and then a 36-month PhD project with either the University of Glasgow or the University of Edinburgh. Project opportunities reflect the varied applications of sensing and measurement, across a wide range of sensing modalities such as physical, chemical, mechanical, optical and more.

Placements

International and UK placements are available with our partner institutions, which include the Universities of Twente, Stanford, Caltech, Duke and Tokyo, and the Fraunhofer Institute and the National Physical Laboratory.

Career opportunities

Sensing and measurement underpin a vast range of societal, research and industrial needs. Sensing is essential for advances in capability across all fields of physics, engineering and chemistry. It is enhanced when individual sensing units are configured in arrays to enable imaging and when multiple sensing functions are integrated into a single smart system. Industrial applications of sensing and measurement are ubiquitous: from mass-produced sensors found in modern smartphones and every modern automobile to the state-of-the-art, specialist high-value sensors routinely used in oil and gas recovery, scientific equipment, machine tools, medical equipment and environmental monitoring. The CDT programme is intended to equip you for career directions including academia, research, industry and beyond.

Entry requirements

A UK 2:1 honours degree or its international equivalent (www.ed.ac.uk/international/graduate-entry), in a relevant science or engineering discipline. Entry is competitive, so we would prefer a UK 2:1 honours degree supported by an MSc degree, or a UK first class honours degree, or their international equivalents, in engineering, physics, chemistry or another relevant physical science. We may also consider your application if you have other qualifications or experience, or a background in another field.

English language requirements

See page 24.

Fees and funding

For fees see page 24 and for funding information see page 26.

Funding

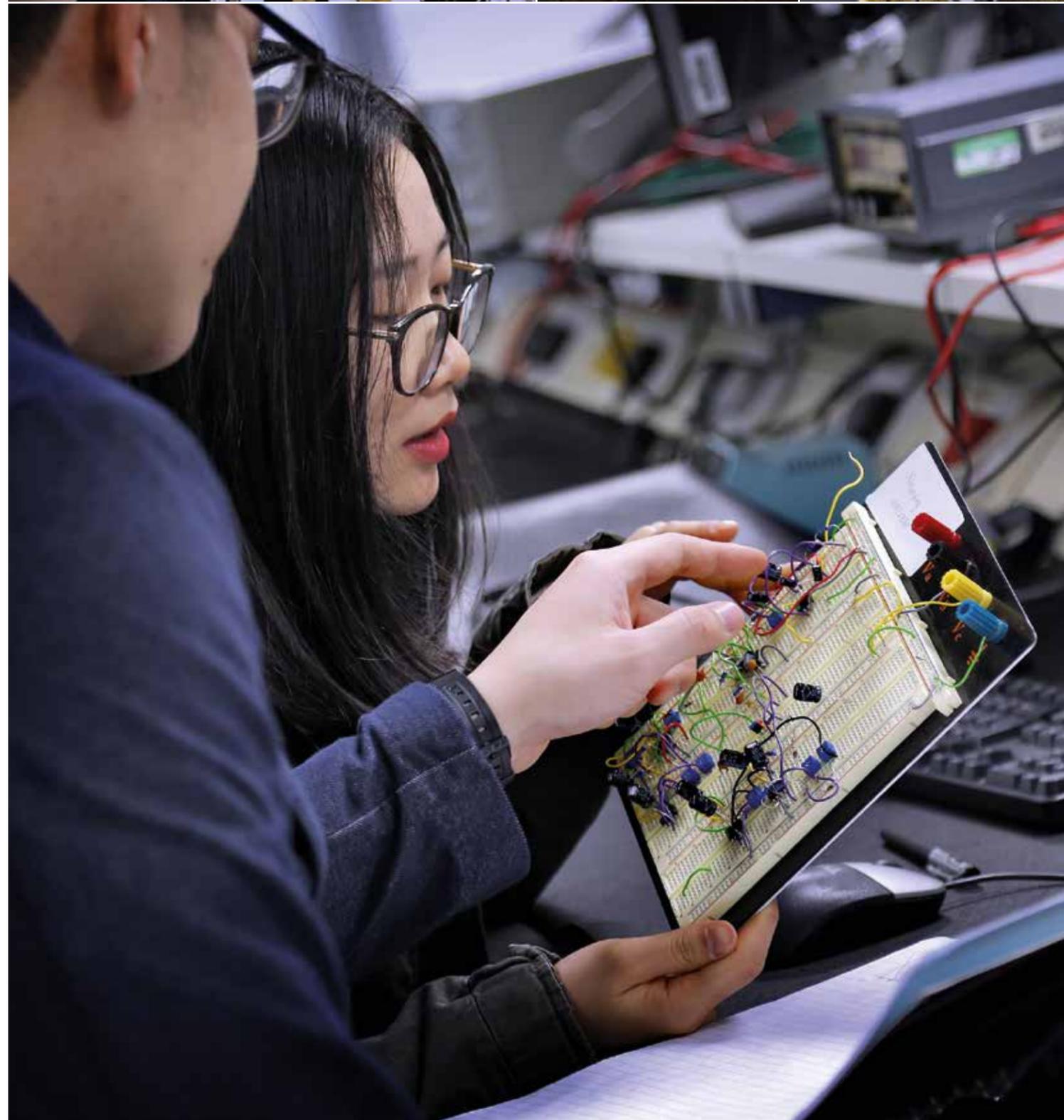
Scholarships that cover fees and a stipend are available for suitably qualified and eligible applicants. There are typically 13 of these scholarships available for each annual intake of students and they are awarded competitively. Applications from self-funded candidates will also be considered.

Programme contact CDT Administrator

Tel +44 (0)131 650 7815

Email cdtism-administrator@eng.ed.ac.uk

By joining our School you will follow in the footsteps of some of engineering's most pioneering individuals.



About the School of Engineering

Our School is a hotbed of innovation. In the 2014 Research Excellence Framework (REF), 94 per cent of our research activity was rated world leading or internationally excellent. We have a strong track record of producing technology spin-outs and we develop industry links to help you build relationships that will last your whole career.

We're one of the University's largest Schools, with more than 350 postgraduates, 1,400 undergraduates and more than 150 staff. Our vision is to achieve excellence in all our teaching and research areas, from the science and mathematics that underpin engineering research to its industrial and commercial applications. Our teaching disciplines are accredited by their relevant professional engineering bodies and six specialist research institutes sit within the School:

Bioengineering

The Institute for Bioengineering has interests in biosensing, tissue engineering, biomedical measurement, modelling and applications. We're developing innovative diagnostic, therapeutic and real-time monitoring biomedical devices and technologies. We demonstrated the first ex vivo and in vivo probing of mechanical characteristics of prostate cancer for monitoring disease progression. Our IMPACT (Implantable Microsystems for Personalised Anti-Cancer Therapy) project will use miniature wireless sensors for minute-to-minute monitoring of individual tumours. Both projects are in collaboration with clinicians from the Western General Hospital and are funded by the Engineering and Physical Sciences Research Council.

Digital communications

The Institute for Digital Communications pioneers new theories and techniques in the fields of signal processing, imaging and communications, technologies that have come to power the global economy. Among recent highlights, Professor Harald Haas' Li-Fi system of lightbulb-based wireless communication was named among the world's top inventions by *Time* magazine.

Energy systems

The Institute for Energy Systems is shaping the difficult energy decisions of the future. It is continuing a tradition of world leading innovation from the 1970s 'Duck' wave

energy converter, invented by Stephen Salter, to direct-drive electrical generators, wave-generation technology and hydraulic transmission systems. Our research covers machinery, electronics, power distribution, marine energy including offshore wind generation, climate change impact assessment and policy development.

Infrastructure and environment

The Institute for Infrastructure and Environment develops better technologies to improve the built and natural environments. It hosts the world leading Building Research Establishment (BRE) Centre for Fire Safety Engineering and outstanding activities in environmental engineering, bulk materials handling, high-speed rail, non-destructive testing, design, performance, resilience and regulation of structures and systems.

Integrated micro and nano systems

The Institute for Integrated Micro and Nano Systems' research encompasses integrated circuit design, system-on-chip design, microfabrication, micro-electro mechanical systems (MEMS), micro-machining and neural computation. Research themes include materials and structures, optical systems and materials, sensors, smart MEMS technology, and smart wireless devices and systems.

Materials and processes

The Institute for Materials and Processes produces world-class research to advance engineering applications of materials, fluids and processes. We use experimental, computational and theoretical methods to shed light on the underlying engineering science. Our research tackles societal challenges, from reducing CO₂ emissions, to sustainable energy, clean water and medical diagnostics and therapeutics. Research themes include carbon capture and separation, multiscale modelling, multi-phase flows and transport phenomena, and materials design and characterisation.



Facilities and resources

From supercomputing to structural testing, the facilities for your postgraduate studies at the School of Engineering are among the best in the world.

Unique resources

We have computing facilities unique to the UK, including the Edinburgh Parallel Computing Centre (EPCC), a leading European centre for research, and the silicon fabrication capabilities of the Scottish Microelectronics Centre (SMC), which also has extensive 'class 10' cleanrooms, and provides rare access to tools for processing 200mm silicon wafers. The SMC has strong links with industry and spin-out activity, generating annual turnover of more than £1 million.

State-of-the-art facilities

The BRE Centre for Fire Safety Engineering hosts bespoke equipment to support groundbreaking research and consultancy with precisely controlled high temperatures and the latest image analysis techniques. The recently refurbished Structures Test Hall is our high-headroom lab for testing large and unusual assemblies. We have state-of-the-art lab facilities for developing and testing non-destructive evaluations and material-handling technologies. We also have a smart infrastructure lab and a good range of environmental engineering testing resources for the water and waste management sectors.

New investment

Our £6.5 million Industrial Doctorate Centre in Offshore Renewable Energy is a new facility that will train 50 engineering doctorate students over nine years in all aspects of offshore renewable energy. The University's leadership in low carbon energy has been further enhanced by a £9 million investment in the FloWave Ocean Energy Research Facility for wave and tidal devices.

Students of biomechanics have access to the best medical imaging facilities in Europe, the Clinical Research Imaging Centre at the Royal Infirmary of Edinburgh, through a major collaboration between the University and the National Health Service.

In addition to outstanding University-based resources, postgraduate programmes use visits to external sites and facilities to gain research data and to contextualise learning.

Collections of the University

The University of Edinburgh has one of the world's great collections, which has been growing ever since its foundation in 1583. Our collections include rare books, archives and manuscripts, art, historical musical instruments and a wide range of museum objects from geological specimens to anatomical models. If laid out end to end, we would have almost 60 kilometres of shelving and storage space devoted to our heritage material, from 1st-century Greek papyrus fragments to new works of sculpture. This is curated by specialist staff across 45 sites and used for our teaching and research and by the wider public community.

The Centre for Research Collections in the Main Library is the hub for all our collections, where specialist curators make them available for study, research and pleasure. Postgraduate students are welcome to study original objects and have made many important research discoveries while working on the archives. You will find an incredible range of material in our collections that is available nowhere else in the world.

We have £10 million support for doctoral training centres in offshore renewable energy and integrated sensor systems.

Community

Our graduate community is large and diverse, composed of 100 academics and more than 350 postgraduate students representing more than 50 nationalities. Our research spans a wide spectrum of modern engineering and we are equipped with state-of-the-art resources, keeping us at the forefront of our research fields.

Unique partnerships

We're a partner in a number of interdisciplinary centres, based both within and beyond the University, from which postgraduate research students can derive additional expertise. These include:

- UK Centre for Carbon Capture and Storage;
- Centre for Biomedical Engineering at Edinburgh;
- Centre for Materials Science and Engineering;
- Centre for Science at Extreme Conditions;
- Scottish Mechano-transduction Consortium;
- Edinburgh Materials Microanalysis Centre.

In addition, postgraduate students can draw on the unique Edinburgh Research Partnership in Engineering and Mathematics (ERPem), a research consortium involving the University of Edinburgh, Heriot-Watt University and Edinburgh Napier University.

More information:
www.erp.ac.uk

Pioneering people

From telephone inventor Alexander Graham Bell to geologist James Hutton, the University of Edinburgh has produced many leading lights in the field of science and engineering.

By joining our School you will follow in the footsteps of some of engineering's most pioneering individuals. Our staff, students and alumni have a long tradition of making a vital contribution to contemporary living. Inventor of the cable car Fleeming Jenkin was Professor of Engineering at the University during the 19th century, and William Rankine, a key contributor to the science of thermodynamics, was educated at Edinburgh.

In more recent times, the late Sir James Hamilton – one of our graduates – was responsible for the wing design on aviation icon Concorde. Professor Stephen Salter, who is based at the School as an Emeritus Professor, is widely considered a pioneer in the field of wave energy (Salter's Duck is featured on the prospectus cover), while

Harald Haas, Chair of Mobile Communications, has attracted international interest with his 'Li-fi' invention. He was named one of the UK's 10 RISE leaders in the Engineering and Physical Sciences Research Council's 2014 awards Recognising Inspirational Scientists and Engineers (RISE).

Our entrepreneurial engineers have also made significant contributions to modern gadgets, such as the iPod and the camera phone. The Institute for Integrated Micro and Nano Systems (IMNS) holds the world record for producing the smallest colour TV screen – just 3.84x2.88mm.



Employability and graduate attributes

With our excellent employability record and international reputation, the University of Edinburgh is a strong choice for developing your engineering career. Whether you are looking to make your mark in industry, consultancy or academia, or develop a business venture of your own, we offer a number of services to help you fulfil your ambitions and make the most of your time here.

Institute for Academic Development

All postgraduate students can benefit from our Institute for Academic Development (IAD), which provides information, events and courses to develop the skills you will need throughout your studies and in the future. IAD events also offer the perfect opportunity to meet and network with other postgraduates from across the University.

Further information is available online:
www.ed.ac.uk/iad/postgraduates

For taught postgraduates, IAD provides a popular study-related and transferable skills support programme. It is designed to help you settle into postgraduate life, succeed during your studies and move confidently to the next stage of your career. We offer on-campus and online workshops and one-to-one study skills consultations, plus online advice and learning materials. Workshops and learning resources cover key topics tailored to different academic stages, including getting started with your studies; critical reading, writing and thinking; managing your exams; and planning for and writing up your dissertation.

IAD also provides a comprehensive programme of transferable skills training, resources and support for researchers completing a doctorate. The workshop programme is designed to help you successfully prepare for the various milestones of your PhD, from getting started with your research, to writing up and preparing for the viva. Workshops cover topics such as writing skills, reference management tools, statistics, preparing for conferences, delivering presentations, time and project management, and personal development. IAD also offers online resources and planning tools to help get your research started, plus support for tutoring and demonstrating, and research public engagement and communication.

Careers Service

Our Careers Service plays an essential part in your wider student experience at the University, offering a range of tailored careers and personal development guidance and support. We support you to recognise the wealth of possibilities ahead, while at university and after graduation, helping you explore new avenues, tap into your talents and build your employability with confidence and enthusiasm.

We provide specialist support for postgraduate students. From exploring career options to making decisions, from CV writing to interview practice, from Employ.ed internships to graduate posts and from careers fairs to postgraduate alumni events, we help you prepare for the future.

We sustain and continually develop links with employers from all industries and employment sectors, from the world's top recruiters to small enterprises based here in Edinburgh. Our employer team provides a programme of opportunities for you to meet employers on campus and virtually, and advertises a wide range of part-time and graduate jobs.

More information:
www.ed.ac.uk/careers/postgrad

Connect.ed

Edinburgh encourages its alumni to stay in touch with current students who share an academic background or are interested in a similar career path. Connect.ed is a networking system run by the Careers Service that provides an informal and confidential opportunity for alumni to share their occupational knowledge and experience with current students, who can contact them for advice and guidance on their future career.

More information:
www.ed.ac.uk/careers/connected

Backing bright ideas

LAUNCH.ed is the University's award-winning programme for student entrepreneurs. Each year, LAUNCH.ed works with hundreds of students to assess their ideas and develop their business skills and helps many start their businesses. We have helped Edinburgh students and alumni launch almost 100 new businesses in the last three years, ranging from language tuition to robotics companies.

More information:
www.LAUNCH.ed.ac.uk

Research support

We encourage our researchers to gain experience and skills through presenting research via formal outlets such as journals or conferences throughout the duration of your programme. Research students may also have access to courses offered by other organisations such as the Engineering and Physical Sciences Research Council (EPSRC).



Applications and fees

We have an online application process for all postgraduate programmes. The system gives full instructions, including details of any supporting documentation you need to submit, such as references, degree transcripts or research proposals.

When applying, you will set up an account, which lets you save your application and continue at another time. Full guidance on our application system is available at: www.ed.ac.uk/postgraduate/applying

General requirements

Our usual entrance requirement for postgraduate study is a UK 2:1 honours degree, or its international equivalent (see www.ed.ac.uk/international/graduate-entry), in engineering, chemistry, biosciences, geosciences, physical sciences or mathematics. You will also need to meet the University's language requirements (see right).

Entry requirements for individual programmes can vary, so check the details for the specific programme you wish to apply for.

Our selection process for PhD programmes is competitive. Experience working within your chosen field can be beneficial, but an MSc is not always required for entrance to doctorate-level studies.

References

For applications to taught programmes, the normal requirement is one reference, although an additional reference may be requested in individual cases. For applications to research programmes, two references are required. You should check online for exact requirements for your intended programme of study. For general guidance on references, visit: www.ed.ac.uk/postgraduate/references

Deadlines

Some programmes have application deadlines. Please check online for details. For all other programmes, you are encouraged to apply no later than one month prior to entry to ensure there is sufficient time to process your application. However, earlier application is recommended, particularly where there is a high demand for places or when a visa will be required. Should you wish to submit a late application, please contact us for guidance. If you are applying for funding, in most cases you will need an offer to study with us before you can make your funding application.

English language requirements

Students whose first language is not English must show evidence of one of the qualifications below.

- IELTS Academic: total 6.5 (at least 6.0 in each module).
- TOEFL-iBT: total 92 (at least 20 in each module).
- PTE(A): total 61 (at least 56 in each of the Communicative Skills sections).
- CAE and CPE: total 176 (at least 169 in each module).
- Trinity ISE: ISE II (with distinctions in all four components).

Please note:

- English language requirements can be affected by government policy so please ensure you visit our degree finder to check the latest requirements for your programme: www.ed.ac.uk/postgraduate/degrees
- Your English language certificate must be no more than two years old at the beginning of your programme.
- We also accept recent degree-level study that was taught and assessed in English in a majority English-speaking country (as defined by UK Visas & Immigration).

Abbreviations: IELTS – International English Language Testing System; TOEFL-iBT – Test of English as a Foreign Language Internet-Based Test; PTE(A) – Pearson Test of English (Academic); CPE – Certificate of Proficiency in English; CAE – Certificate in Advanced English; Trinity ISE – Integrated Skills in English.

www.ed.ac.uk/english-requirements/pg

Tuition fees

The following table provides an overview of indicative fee levels for programmes commencing in 2018.

Figures marked * show the fee level set for the 2017/18 academic year. All other figures are indicative of expected fee levels for your studies during the 2018/19 academic year. Because these figures are indicative, it is important you check online before you apply and check the up-to-date fee level that will apply to your specific programme: www.ed.ac.uk/student-funding/tuition-fees/postgraduate

Please note:

- International students starting full-time taught programmes of study lasting more than one year will be charged a fixed annual fee.
- All other students on full-time and part-time programmes of study lasting more than one year should be aware that annual tuition fees are subject to revision and are typically increased by approximately five per cent per annum. This annual increase should be taken into account when you are applying for a programme.
- In addition to tuition fees, your programme may be subject to an application fee and additional costs/programme costs may apply. Please check the latest programme information online.

Tuition fees for EU students

EU students enrolling in the 2018/19 academic year will be admitted as Scottish/EU fee status students. Taught masters students will be eligible for the same tuition support as Scottish domiciled students from the Student Awards Agency for Scotland (SAAS).

For UK/EU students

	Annual fee
Taught programme 1-year FT	£11,500
Taught programme 2-years PT	£5,750
MSc by Research 1-year FT	£7,900
MSc by Research 2-years PT	£3,950
All other research programmes FT	£4,195*
All other research programmes PT	£2,098*

For international students

	Annual fee
Taught programme 1-year FT	£25,100
MSc by Research 1-year FT	£25,100
All other research programmes FT	£21,000

* Figure shown is the 2017/18 fee level. All other fees quoted are indicative of 2018/19 fee levels. Because these figures are indicative, it is important you check online before you apply and check the up-to-date fee level that will apply to your specific programme: www.ed.ac.uk/student-funding/tuition-fees/postgraduate



Funding

A large number of scholarships, loans and other funding schemes are available for your postgraduate studies. For further information on applications and eligibility, please visit: www.ed.ac.uk/student-funding/postgraduate

Awards are offered by the School of Engineering, the College of Science & Engineering, the University of Edinburgh, the Scottish, UK and international governments and many funding bodies.

Here we list a selection of potential sources of financial support for postgraduate students applying to the School of Engineering. This list was correct at the time of printing but please check the full and up to date range online (see above).

Tuition fee discounts

We offer a 10 per cent discount on postgraduate fees for all alumni who have graduated with an undergraduate degree from the University. We also offer a 10 per cent discount for international graduates who spent at least one semester at the University of Edinburgh as a visiting undergraduate: www.ed.ac.uk/student-funding/discounts

Key

- Taught masters programmes
- Masters by Research programmes
- Research programmes

Scholarships at the University of Edinburgh

- **Beit Trust** ●●
Beit Trust and the University of Edinburgh Scholarships jointly fund postgraduate students from Malawi, Zambia and Zimbabwe to undertake a masters: www.beittrust.org.uk
- **China Scholarships Council/University of Edinburgh Scholarships (China)** ●
A number of scholarships for PhD study to candidates who are citizens and residents of China: www.ed.ac.uk/student-funding/china-council
- **Edinburgh Global Masters Scholarships** ●●
A number of scholarships are available to international students for masters study: www.ed.ac.uk/student-funding/masters
- **Edinburgh Global Research Scholarships** ●
These scholarships are designed to attract high-quality international research students to the University: www.ed.ac.uk/student-funding/global-research
- **Edinburgh Principal's Career Development Scholarships** ●
A number of scholarships, open to UK, EU and international PhD students: www.ed.ac.uk/student-funding/development

- **Enlightenment Scholarships** ●
The University is currently developing a new style of PhD scholarship to attract the best PhD applicants from around the world. These scholarships will provide funding for up to four years. For the latest information, and for details on which Schools will be participating, please check: www.ed.ac.uk/student-funding/enlightenment
- **Edinburgh Syrian Postgraduate Scholarships** ●●
A number of scholarships are available to postgraduate students from Syria studying a full-time one-year masters: www.ed.ac.uk/student-funding/postgraduate/syria
- **Engineering International Masters Scholarships** ●
Scholarships are available to students accepted on a full-time masters degree: www.ed.ac.uk/student-funding/postgraduate/eng-masters
- **Highly Skilled Workforce Scholarships** ●
A number of scholarships are available to UK nationals permanently domiciled in Scotland, and to EU nationals domiciled either on mainland EU or in Scotland, who have been accepted on an eligible full- or part-time masters programme. The scholarships, which are funded by the Scottish Funding Council and subject to annual confirmation, cover the UK/EU tuition fee. At the time of printing, we are awaiting confirmation of these scholarships from the Scottish Government: www.ed.ac.uk/student-funding/sfc-hsw
- **Julius Nyerere Masters Scholarships (Tanzania)** ●●
One scholarship is available to citizens of Tanzania who are normally resident in Tanzania who are accepted on a full-time masters programme: www.ed.ac.uk/student-funding/nyerere
- **Kenneth Denbigh Scholarship** ●
Five scholarships are available to students accepted on to the MSc Advanced Chemical Engineering: www.ed.ac.uk/student-funding/postgraduate/engineering/denbigh

- **MasterCard Foundation Scholars Programme (Africa)** ●
A number of scholarships for applicants who are residents and citizens of a Sub-Saharan African country will be available for eligible masters programmes. The scholarships cover full tuition fees and expenses for accommodation and maintenance for African scholars with few educational opportunities: www.ed.ac.uk/student-funding/mastercardfdn

Research council awards

Research councils offer awards to masters, MPhil and PhD students in most of the Schools within the University of Edinburgh. All studentship applications from the research councils must be made through the University, through your School or College office. Awards can be made for both taught and research programmes.

Normally only those UK/EU students who have been resident in the UK for the preceding three years are eligible for a full award. For some awards, candidates who are EU nationals and are resident in the UK may be eligible for a fees-only award. The UK Government has confirmed that EU postgraduate research students commencing their studies in 2018/19 will retain their fee status and eligibility for research council support for the duration of their programme: www.ed.ac.uk/student-funding/research-councils

The University also offers a number of scholarships in partnership with the following overseas government agencies:

- **Chile** ●●●
National Commission for Scientific and Technological Research (CONICYT): www.conicyt.cl
- **Colombia** ●
Administrative Department of Science, Technology and Innovation (Colciencias): www.colciencias.gov.co
- **Ecuador** ●●●
Secretaria Nacional de Educacion Superior, Ciencia y Tecnologia (SENESCYT): www.educacionsuperior.gob.ec
- **Iraq** ●
Ministry of Higher Education and Scientific Research: www.iraqiculturalattache.org.uk
- **Mexico**
National Council of Science and Technology of the United Mexican States (CONACYT): ●●●
www.conacyt.mx
Banco de Mexico and the Banco de Mexico's FIDERH trust (FIDERH): ●●●
www.fiderh.org.mx
Fundacion Mexicana para la Educacion, la Tecnologia y la Ciencia (FUNED): ●●●
www.funedmex.org
- **Pakistan** ●
Higher Education Commission, Pakistan (HEC): www.hec.gov.pk

- **The Canada Student Loans Program** ●●●
The University is eligible to certify Canadian student loan applications: www.ed.ac.uk/student-funding/canadian-loans
- **Erasmus+** ●
The Erasmus+ Master Loan helps masters students with their living and tuition costs when studying in an Erasmus+ country other than where they live or where they took their first degree. For more information: <https://erasmusplus.org.uk/master-loan>
- **Postgraduate Loans (PGL) England** ●●
Student Finance England offers postgraduate loans for taught and research masters programmes, payable to eligible students: www.gov.uk/postgraduate-loan
- **Postgraduate Loans (PGL) Northern Ireland** ●●
Student Finance Northern Ireland offers a tuition fee loan for taught and research programmes, at certificate-, diploma-, and masters-level, which will be paid directly to the University: www.studentfinanceneni.co.uk

Loans available for study at the University of Edinburgh

The University of Edinburgh is a participating institution in the following loans programmes, meaning we certify your student status and can help with the application process.

- **The Canada Student Loans Program** ●●●
The University is eligible to certify Canadian student loan applications: www.ed.ac.uk/student-funding/canadian-loans
- **Erasmus+** ●
The Erasmus+ Master Loan helps masters students with their living and tuition costs when studying in an Erasmus+ country other than where they live or where they took their first degree. For more information: <https://erasmusplus.org.uk/master-loan>
- **Postgraduate Loans (PGL) England** ●●
Student Finance England offers postgraduate loans for taught and research masters programmes, payable to eligible students: www.gov.uk/postgraduate-loan
- **Postgraduate Loans (PGL) Northern Ireland** ●●
Student Finance Northern Ireland offers a tuition fee loan for taught and research programmes, at certificate-, diploma-, and masters-level, which will be paid directly to the University: www.studentfinanceneni.co.uk

- **Postgraduate Loans (SAAS) Scotland and EU** ●●
The Student Awards Agency Scotland offers tuition fee loans for taught diploma and masters programmes which will be paid directly to the University. Full-time students resident in Scotland can also apply for a non-income assessed living cost loan: www.saas.gov.uk
- **Postgraduate Loans (PGL) Wales** ●●
Student Finance Wales offers eligible students postgraduate loans for taught and research masters programmes: www.studentfinancewales.co.uk
- **US Student Loans** ●●●
The University is eligible to certify loan applications for US loan students. Full details on eligibility and how to apply can be found online: www.ed.ac.uk/student-funding/us-loans

Other sources of funding

The following lists scholarships and support schemes available to students from particular countries who meet specific eligibility criteria.

- **Chevening Scholarships** ●●●
A number of partial and full funding scholarships are available to one-year masters students: www.chevening.org
- **Commonwealth Scholarships** ●●●
Scholarships available to students who are resident in any Commonwealth country, other than the UK: www.dfid.gov.uk/cscuk
- **Marshall Scholarships (USA)** ●●●
Scholarships available to outstanding US students wishing to study at any UK university for at least two years: www.marshallscholarship.org
- **Scotland's Saltire Scholarships** ●●●
A number of scholarships open to students who are citizens permanently and ordinarily resident in Canada, China, India, Pakistan and the USA for one year of masters study: www.ed.ac.uk/student-funding/saltire



Campus map

The School of Engineering is based at the Sanderson Building on the King's Buildings campus. The campus is around two miles from Edinburgh city centre and is well served by buses, including a free University shuttle service during semester time.



Detailed maps
can be found at:
www.ed.ac.uk/maps



Get in touch

Contact us

For more information about MSc programmes at the School of Engineering contact:

MSc Administrator
School of Engineering
Faraday Building
Colin Maclaurin Road
The King's Buildings
Edinburgh EH9 3DW
Tel +44 (0)131 650 7352
Email pgtaught@eng.ed.ac.uk

For more information about applying for our research programmes, contact:

The Graduate School
School of Engineering
Sanderson Building
Robert Stevenson Road
The King's Buildings
Edinburgh EH9 3FB
Tel +44 (0)131 651 7213
Email engradoffice@ed.ac.uk

To discuss your research proposal, please contact potential supervisors. Details can be found at the Research Institutes' web pages, via www.eng.ed.ac.uk/research

For information about the taught professional doctorate contact:

Industrial Doctoral Centre for Offshore Renewable Energy
IDCORE office
Sanderson Building
Robert Stevenson Road
The King's Buildings
Edinburgh EH9 3FB
Tel +44 (0)131 651 9023
Email info@idcore.ac.uk

For general enquiries contact:

Director of Teaching
Stephen Warrington
Email s.w.warrington@ed.ac.uk
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Professor Jason Reese
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Visit us

The University's Postgraduate Open Day is your opportunity to come and meet current staff and students. Our next campus-based Open Day takes place on 15 November 2017. For more information, visit: www.ed.ac.uk/postgraduate-open-day

Our visits to you

If you are unable to visit the University, we attend events throughout the year so you can meet and speak to us in person.

UK and Europe: www.ed.ac.uk/postgraduate/uk-eu-events

International: www.ed.ac.uk/international/our-visits-overseas

Chat online

We offer all postgraduate students monthly online information sessions. To find out more and see when the next session will be: www.ed.ac.uk/postgraduate/online-events

For international students, Edinburgh Global runs two online chat sessions each month. These are timed to give students in all timezones a chance to get involved. You can find out more and register online: www.ed.ac.uk/international/chat-to-us-online

In addition, the School of Engineering runs virtual visits for taught MSc programmes throughout the year, and we invite all applicants to these. Those who have yet to apply should contact the MSc Administrator for more details. Prospective research students wishing to visit should contact the Graduate School.

Drawn to
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You are in good company. More than 37,000 of the world's brightest minds study here. Learn more at www.ed.ac.uk



Illustration by:

Katy Wiedemann, MA Illustration

The front cover shows Salter's Duck, a device for converting wave power into electricity. Invented at the University in 1974 by Professor Stephen Salter, the device is still regarded as one of the most efficient wave power designs. Professor Salter is now Senior Honorary Professorial Fellow in the School of Engineering.

#drawntoedinburgh

This publication is available online at www.ed.ac.uk/postgraduate and can be made available in alternative formats on request. Please contact communications.office@ed.ac.uk or call +44 (0)131 650 2252.

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We have made every effort to ensure the accuracy of the information in this prospectus before going to print. However please check online for the most up-to-date information: www.ed.ac.uk

On 23 June 2016 the UK electorate voted in a national referendum to leave the European Union. At the time of going to print, there was no immediate material change known that would impact on applicants for 2018 entry. However we recommend that you check online for the latest information before you apply: www.ed.ac.uk/news/eu

The University's standard terms and conditions will form an essential part of any contract between the University of Edinburgh and any student offered a place here. Our full terms and conditions are available online: www.ed.ac.uk/student-recruitment/terms-conditions

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